GARDEN AND FOREST.

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The National Government and the National Forests.

IN his annual message the President of the United States commends to the attention of Congress the statements relating to forestry which are contained in the report of the Secretary of the Interior, and he adds that "the time has come when efficient measures should be taken for the preservation of our forests from indiscriminate and remediless destruction." The President might have said that this time actually arrived many years ago; and we should have been pleased if he had considered the subject of sufficient importance to warrant more than a perfunctory notice. Turning to the report of Secretary Smith, we find that he recommends legislation which may "lay the foundation for a wise and comprehensive forestry system to be applied to the timber on the public land and to the forest-reservations," and he ventures the opinion that "the creation of a forestry commission, in connection with the Land Office, looking toward the education and use in this work of men thoroughly suited for it, is already needed." We agree with the Secretary as to the urgent necessity of a commission of forest-experts, although we are hardly sure that we fully comprehend precisely what functions it is to fulfill in Mr. Smith's scheme of forest-administration.

Five years ago GARDEN AND FOREST proposed, in outline, a policy which was: (1) To withhold from sale and entry forest-lands on the national domain until a thorough examination had been made to show what timber tracts could be put upon the market without injury to the country's highest interests. Meantime, in order to protect the forest, it was advised (2) that the guardianship and defense of the nation's forests should be entrusted to the army of the nation until a sufficient number of adequately trained and equipped foresters could be provided for the administration of a permanent forest-policy. In connection with this we urged (3) the appointment by the President of a commission to examine into the condition of the forests in all their relations to agriculture, public health and water-supply, so that an intelligent determination could be reached as to what portions of the forest on the public domain should be preserved forever, and in what manner the remainder should be disposed of. We still believe that a scheme like this was practicable and desirable. It received the approval of the American Forestry Association, at its meeting in Philadelphia, as a wise preparation for systematic and permanent forest-management. But Congress never made any pretense of considering it, much less of taking action on it, and never during all these years has made one honest effort to protect and perpetuate the forest-supplies and forest-influences which are so essential to the common weal. Meanwhile, mile after mile of timber-lands have passed into the control of lumbermen, whose sole interest is to remove the timber as rapidly and cheaply as possible. Timber-thieves have been cutting on the public domain, and no determined effort has been made to restrain them. Fires have devastated hundreds of thousands of acres and private herds have grazed on public lands and destroyed the undergrowth of hundreds of thousands more. And yet nothing in the way of law, and very little in the way of an increased enlightenment of public sentiment, exists to-day to prevent these ravages from continuing indefinitely. To say that there has been no advance in public knowledge on this subject would hardly be true, for, as the forest-area narrows, the apprehensions of a coming timber-famine grow, and men become thoughtful. Something, too, has been done in the way of setting apart forest-reservations in accordance with a paragraph which was adroitly or luckily slipped in at the end of a bill where it did not properly belong. Certain it is, that neither the President nor his Secretary need have any apprehension of being considered alarmists when they assert that legislation is needed, and needed at once.

In another part of his report, Secretary Smith, in writing of the national parks and reservations, invites attention to a state of affairs which will surprise those persons who have been flattering themselves that these reservations were under the protection of the army. It seems that during the summer many complaints were made to the Department that stockmen had been driving sheep into the reserves, destroying the herbage and setting fire to the trees. The Commissioner of the General Land Office also invited the attention of the Department to the necessity of protecting these reserves, and urged that portions of the army be detailed to look after them until Congress could make suitable provision. Accordingly, the attention of the Secretary of War was directed to the facts, and he was requested to send a sufficient number of troops to protect the reservations. This request, however, was declined, because the Judge Advocate General of the Army had decided that the employment of troops in such cases and under the circumstances described would be unlawful. The reservations, therefore, remain, with the same protection which is extended to other unreserved public lands, and no more. When the attention of the Judge Advocate General was invited to the fact that officers had been already detailed to protect certain national parks and forest-reservations, he replied that such detail was clearly an oversight on the part of the War Department at that time, and he added that "there is no express authorization by the constitution or by act of Congress for the troops to be used for the purpose of executing the laws relating to these reservations, and it is therefore unlawful to do so." It will be seen, therefore, that even the imperfect policing which it had been supposed a handful of cavalry could give to an area as large as some of our states, is no longer to be hoped for.

Here certainly is need of immediate action. Congress should not delay an hour the passage of an act to authorize and direct the Secretary of War to make necessary details of troops to protect the national parks and reservations which have been established under an act of Congress, or which may hereafter be set apart as public forest-

reservations by the President of the United States. These reservations are the property of the people, and they have a right to demand that the army shall be used to defend this property from trespassers or intruders who destroy the woods or kill the game or in any way mar the beauty or impair the value of what has been dedicated to their use and enjoyment forever.

The issues which now absorb public attention, and which this Congress must meet, are grave and urgent, it is true; but the wisest possible action of our representatives in regard to the tariff or the currency or taxation or our relations with foreign powers, or to all of them combined, would not do as much to advance public prosperity as would the adoption of some measure laying broad and deep foundations for a stable and efficient forest-policy.

The present method of distributing seed by the Department of Agriculture is vigorously attacked by Secretary Morton, and his arguments are reproduced at length in the President's Message, who devotes considerably more space to this subject than he does to that of forestry. The story of this abuse is an old one, but although every one knows that the whole business is wasteful and fraudulent, the practice has been kept up long after any man of sense has presumed to justify it. More than half a century ago the Commissioner of Patents conceived the idea of distributing some improved varieties of seed among farmers, which he did at his own expense. Afterward a small appropriation was made to help on this praiseworthy object. From this small beginning the practice has swelled year after year until last year more than $135,000 were expended in buying seeds, bulbs and cuttings, most of them of ordinary kinds, and distributing them, gratis, among the people. From an analysis of what is distributed, Secretary Morton estimates that enough cabbage has been sent out to plant 19,200 acres, a sufficient quantity of beans to plant 4,000 acres, of sweet corn to plant 7,800 acres, and so on, with beets, cucumbers and watermelons in like profusion, until a total of more than nine million of packages is summed up, or enough flower and vegetable seeds to plant 89,596 acres of land, and all this in a single year. All those who receive these seeds are instructed to report results upon them; but, of course, no one makes any report whatever, so that it is evident that in popular estimation this dissemination is considered altogether a gratuity. The Secretary might have pursued his investigations still further and found some interesting data as to the quality of the seeds purchased and the prices paid for them, but perhaps the disclosures made are enough for one year. The Secretary wisely declares that the system ought to be abolished, or, at least, that no seeds except those of new varieties should be distributed, and these should be sent to the experiment stations where their value could be tested.

Fences.—III.

Intrinsic ugliness, as we have said in former articles, is the first sin one notes in considering American fences collectively. But the sin of inappropriateness is just as apparent. Sometimes we see a pretentious stone-wall, with heavy, ornate gate-posts, encircling small grounds and a wooden cottage; and no matter how fine in itself the fence then may be, it distresses any one who appreciates the prime artistic virtue of fitness. Still more often a cheap or shabby fence surrounds beautifully kept grounds and a costly house, injuring harmony of effect, and seeming to prove that the owner spent more lavishly at first than he could afford and ran out of funds before his fence was reached. Again, a hedge has been planted without proper consideration of the exposure or of the character of the soil, and wears a forlorn expression which the intelligent observer will know to have been inevitable; or a high fence stands where a low one would have been in better taste, or a very low one where thronging men or animals demand something higher for the satisfaction of the eye at least.

No fence can be good which is not suitable; and none can be suitable which has not been designed with proper respect for its relation to the character of the buildings it accompanies; to the practical requirements of protection; to the general aspect of the road or street, and to the nature of the district as rich in one building material or another. A gilt-tipped wrought-iron fence of the most artistic design would not look well around a cottage set on a rocky New England bluff or on the edge of an Adirondack lake, nor a rustic cedar fence in a dignified suburban street of villas. A brick wall, which would be eminently appropriate in a region devoid of stone, would not be as well suited to a place in the stony Berkshire hills. A wall of cut stone, or even of white marble, has the right expression near the quarries of these hills, while, if transported to the New Jersey shore, it would seem an inartistic bit of ostentation. In certain cases an owner may well sacrifice a justifiable preference for some type of fence if it would conflict disagreeably with his neighbors' fences, thus injuring the general aspect of the street. And then, when considerations of fitness have determined what material shall be used for the fence, its height, its solidity and its degree of elaboration should be determined in the same manner, with careful regard to the size and expression of the house, the extent of the grounds, and the nature of the highways.

Finally, there is a third sin to be noted as too frequently characteristic of our fences. The effect of the good ones is too often injured, and the effect of the poor ones rendered still worse by inexcusable neglect and untidiness. An intelligent observer of agricultural regions accepts their fences as a pretty fair indication of the general temper and habits of the population. The ragged sod-walls of the Irish peasant, compared with the neat hedges of the English peasant, tell a plain tale with regard to differing social and economic conditions lasting through many centuries. Every traveler through New England knows that here a well built and kept stone-wall or neat wooden paling means thrift, prosperity and a corresponding degree of contentment and refinement, while a tumbling wall or broken paling means a worn-out farm, boys gone off to the city, poverty, shiftlessness, and the death of hope. Nowhere, in ante-bellum days, could the difference between the north and the south be more clearly read than in the unlikeness of the neat fences of a Massachusetts village to the ragged unkemptness of those in a Georgian village—the self-respecting prosperous working-man had built the former, the negro or the "poor white" the latter.

Of course, the significance of such signs as these may be overestimated, especially in comparing a newly settled district with one which has been long inhabited. It would be foolish to expect such fences as should encircle a small New England farm to be repeated around the great new farms of the west, and foolish to look in a region poor in both stone and wood for the same solidity in fencing that is natural in a tree-covered. rocky land. Moreover, all America is new as compared, for example, with England, and in few parts of it can we expect an English neatness of wall and hedge. Foreigners undoubtedly do us injustice if they gauge our general love for order, frugality and niceness in matters of details by our fences alone. Nevertheless, even from our own point of view, and making all due allowance for national newness and special local conditions, our fences are not, as regards mere neatness, half as good as they ought to be. This is true even with regard to rural districts and small villages. But it is painfully true with regard to those suburban districts and summer colonies which are inhabited by well-to-do people, and often by the wealthiest people of America. There is nothing more surprising at Newport, for example, than the average poverty and untidiness of the fences as compared with the costliness of the houses and the almost excessive neatness with which their grounds are kept. Many of the fences around the finest

houses are ugly; many more are inappropriate, few among those built of the more perishable materials are kept in perfect repair, and their outer borders are seldom tended properly. On an open country-road a property-owner may be excused if he keeps his wall in good repair and its inner borders rightly planted or cleaned, while he lets stones and weeds and heaps of dirt accumulate outside. But, on a street or avenue like those of Newport, perfect neatness is as imperatively required outside a fence as within it. Uncertain or divided responsibility is often responsible for neglect in this particular—the property-owner thinks that it is the town's business to keep the street-borders neat, the town officials think that it is his business, or are neglectful of their duties. But it is hard to understand how any person able to own a fine house and grounds in a place like Newport can be content to do no more than he must in the care of the high-road; for a ragged, unkempt bit of high-road adjoining his wall is not only ugly in itself and a public disgrace, but specially injurious to the effect of his wall and his property as seen beyond it.

Unimproved pieces of property in Newport and similar places are often encircled, even when they lie on the most frequented streets, by mere rough fences of rails or boards. It need hardly be said that this is inexcusable. A property-owner who thinks only of his own pocket—who protects his land against marauders in the cheapest way he can, not caring whether or no his fence injures the effect of neighboring places, hurts the general perspective of the street, and is an eyesore to every passer-by—such a property-owner has no real love of beauty, and is a bad citizen besides.

Need we explain that to keep fences neat and in good order should not always mean to keep them primly clean and free from all fringing and climbing plants? Appropriateness is synonymous with good sense and good taste in this as in every point. The degree of neatness required on a suburban avenue is greater than that required on a modest village street, much greater than that required along a rural higway. But, however freely and variously Nature may be allowed to drape and buttress a fence, the fence itself should be kept in good repair. Gaping brick-work, tottering stones, broken palings, fallen rails or swaying posts can never be pleasing to the eye, except, of course, where man's work has patently gone to ruin and been abandoned to Nature, who can turn confessed decay into picturesqueness. A broken fence, with the aid of which Nature has created a luxuriant hedge-row, or a fallen stone-wall over which she has woven a garment of wild Roses, Grape-vines and Smilax, is a charming thing to see; but only where the soil itself has been abandoned to her free devices—never amid the surroundings of an inhabited house or encircling fields still cultivated to supply the wants of man. Here, also, Nature may sometimes be allowed a pretty free hand; but man's supremacy should still be manifest; and this supremacy does not manifest itself favorably if signs of neglect and decay are apparent in any piece of his handiwork.

Botanical Notes from Texas.—XIV.

THE city of Corpus Christi stands near the north-west corner of a bay of the same name, which is an inlet of the Gulf of Mexico. The Texas coast here turns to the south and holds the waters of the Gulf from extending much farther westward; in fact, the mouth of the Rio Grande River is a little east of Corpus Christi. The city is old, though it does not contain over five or six thousand inhabitants. It was the base of General Taylor's military operations during the Mexican War, and the earthworks thrown up by his troops, just east of the city, are still plainly to be seen.

A portion of the city is built upon the beach and not much above its level, and occasionally this part of the town has been invaded by immense tidal waves. The plateau upon which most of the city is built is thirty or forty feet above the bay and commands a view of the entire bay and of the reefs or islands which separate it from the Gulf. Corpus Christi and Laredo are on nearly the same parallel, and the ninety-seventh meridian is just by the city.

The Nueces River brings down the waters collected by the Blanco, Guadalupe, San Antonio, Medina, Frio and Leona Rivers, and forms a large marsh and bay of its own, uniting with the waters of Corpus Christi Bay a little east of the city.

Among the coast plants Œnothera is well represented here, as along most of the Texas coast, by the prostrate, handsome, strong-growing Œ. Drummondii. Its thickened leaves are whitened by a dense pubescence. Just as night closes in, its handsome large yellow flowers open and lie like stars upon the sand, where not a blossom was to be seen a few minutes before. The visitor who rises early will also see them in his morning walk, but they are not so handsome then as they are at nightfall.

There are two or three species of Salicornia on the salt-marshes here. S. herbacea is a common inhabitant of most of our entire ocean shore. It is also occasionally found in salt-marshes of the interior. Its rounded succulent stems, already salted, are often pickled in vinegar and eaten as a salad or relish. Formerly, if not now, it grew in abundance on the salt-marshes around Syracuse, New York, and was collected and sold from house to house under the name of Samphire. Though an Old World species, it was not the Samphire of Shakespeare: "Half-way down hangs one that gathers Samphire, dreadful trade!"—a reference to Crithmum maritimum, an umbelliferous plant.

A remarkable plant of the Gulf beaches is Lycium Carolinianum, found commonly creeping in damp sands. It has rounded fleshy leaves, purplish flowers and bright red berries. The fruit is edible, and is gathered and eaten uncooked, or is used by coast people for pies, tarts and jellies. In one museum of Texas productions I saw a jar of it, labeled "Texas Cranberries." Statice Limonium, handsome in appearance, and useful as a remedial agent, is very abundant on the salty soils, painting the otherwise naked sand a lilac hue. Borrichia frutescens is common along the entire coast. Bearing it company here, though hardly recognizable, dressed in more numerous, thickened leaves, is Aplopappus rubiginosus, or a form of it. Even the handsome genus Gaillardia has set out to make a maritime species of its own out of a form of G. pulchella, and has already thickened its leaves, changed the color of its rays, and otherwise disguised its appearance.

In addition to the numerous genera of plants whose species are always found on the shores of bodies of salt-water or in the vicinity of salt-springs and salt-marshes, and which everywhere reveal the character of the soil in which they grow, most large genera whose species usually grow inland have also developed species which have located near the sea, and have become changed by their surroundings, until in their general structure and appearance they closely resemble their neighbors which naturally belong to the coast. It is interesting to study how a genus of many species has sent them out to represent the type in so many modifications of size, form and mode of living. They may be found large and small, tall and short, smooth and hairy, armed and unarmed, handsome and plain, erect and prostrate, aromatic and fœtid, fragrant and odorless, climbing or creeping, with leaves of all forms, flowers of all hues, and fruits and seeds of all sizes, forms and flavors consistent with its own idea of life. The thick-leaved Cissus incisa was doubtless born and bred near salt-water, but through long periods of time it has learned to adapt itself to somewhat different conditions, though even now it seems to be better pleased when living on the coast.

The commonly cultivated Tamarix Gallica shows its origin at once as it approaches the sea. A slight shrub in northern gardens, hardly able to stand alone, it becomes along the coast a tree with a short spongy trunk sometimes two feet in diameter. It is often planted in coast cities as a street-tree. Here it is oftener seen in yards, with its long lithe branches, trained over bowers or merely sustained by poles, forming dense shades. It is generally known as Coast Cedar or Salt Cedar.

I concluded my botanical studies at Corpus Christi by taking a long stroll down the beach of the bay, returning upon the bluffs. Rarely on the sand I met the more southern crucifer, a Synthiplis which is slowly extending up the bay. Near by a Cakile was growing, probably C. maritima. It was the only individual of that species which I have seen along the Texas coast. At least three species of Atriplex are common on the salt-marshes. In drier and less saline places the common coast plant Sesuvium portulacastrum makes itself at home. There are nearly erect as well as trailing forms of it. Its rose-colored calycine leaves add beauty as well as variety to the coast flora. Curly Mezquit, the well-known Buffalo-grass of the plains, grows within reach of tide-water.

On the slight bluffs of "washes" and elsewhere the dainty growing and handsome climbing Antirrhinum maurandioides grows. The whole plant is attractive, and especially its light blue Snapdragon-flowers. It is often cultivated. Clematis Drummondii also does well in the salt air. The little Xanthoxylum Pterota and Leucophyllum Texanum come to the coast and mingle with Rubus trivialis and Cissus incisa.

Tropical Ipomœa fistulosa has rarely obtained a foothold in the salt-sands. Two or three other species of Ipomœa are saline plants. I. sinuata, bearing handsome white waxy flowers, with a purplish centre, ventures to the coast in its range. Its flowers expand for only two or three hours during the middle of the day, and it is therefore known as "Noon-flower." Low-growing Eustoma silenifolium is often seen here, and rarely Malvaviscus Drummondii grows five to six feet tall when salt-water may lave its roots.

On the highlands two shrubby species of Aster are common—A. Palmeri and A. spinosus. The shrubby Salvia ballotæflora is very common in rocky places. It is strongly scented with the peculiar odor of the officinal species.

Acacia feliceria reaches the coast in its range southward. In its growth it is the humblest of our Acacias. It has a more extended northern range than any other species of the genus. Cuscuta exaltata grows luxuriantly within reach of high tide.

Kansas City, Kansas. *E. N. Plank.*

New or Little-known Plants.

Chrysanthemum, Pitcher & Manda.

THE new Chrysanthemum illustrated on page 515, and which would be classed among the reflexed Japanese varieties, has attracted much attention at the principal exhibitions this year, and has received a number of prizes and certificates. It was originated by Messrs. Pitcher & Manda, of the United States Nurseries, Short Hills, New Jersey. The seed-parent was D. S. Brown, a variety with lemon-yellow flowers, which show the centre to some extent, and the pollen-parent is unknown. Seed was sown in the spring of 1892, and it flowered last autumn. This is, therefore, the second year that it has been grown, and it has proved to be of sturdy habit and excellent foliage, while the flowers are quite distinct in form and unique in color. As shown this year it was not a deep flower, but a very solid one, of large diameter. The head is composed of a great number of tubular corollas, of which the outer five or six rows, grooved toward the end, are a creamy white, sometimes showing a tint of yellow just at the edges. The most striking feature of the flower is the suffusion of the inner corollas with a deep chrome-yellow, which, in contrast with the cream-white rays surrounding them, is very taking.

A correspondent, who saw this flower in Boston, wrote: "It seems a pity that a starry flower, with a golden heart and silver rays, which might well be named Planet, or Aldebaran, or Sirius, should be doomed to wear such a prosaic title as Pitcher & Manda." The name has the one merit of commemorating its originators, and it has been the fashion for a long time to name Roses, Carnations, Chrysanthemums and other flowers after men and women. This is the first instance, to our knowledge, however, in which the name of a firm has been utilized in this way. Perhaps other firms will see the advantage of such a nomenclature, and another year we may have the variety "Hoopes Brothers & Thomas," or "The Andorra Nursery Company, Limited." This is not a matter of vital importance, and new varieties are increasing so rapidly that names are only useful for purposes of identification, and yet we think the flower is sufficiently distinct and individual to deserve a characteristic name.

Foreign Correspondence.

London Letter.

Rosa gigantea.—It is now five years since this Rose was introduced into cultivation from Burma, where it had been discovered by Major General Collett, who sent seeds of it to Kew and elsewhere. It has very thick stems, reddish spines, and bears large single white flowers, five inches in diameter. It grows very freely in a cold-house at Kew, and it stood out-of-doors without protection for two years, but succumbed to the severe frost of last winter. No doubt, the plants grown under glass will flower when old enough. Roses raised from seeds being, as a rule, slow to flower. Meanwhile, the following information respecting it, from a correspondent in Burma, will be read with interest by all who possess this Rose: "Rosa gigantea grows in profusion immediately opposite the window I am now writing at, and for a hundred yards or more away. The boles of some of the plants are as thick as a man's thigh. It is a creeper and does not flower until it gets over or beyond the tree it climbs. These specimens are on large evergreen trees, and their roots are in limestone and vegetable mold, through which run innumerable springs of pure water. The boles of the Roses never get the sun, and they are always in the neighborhood of spring water, which their roots, no doubt, find. The whole of a large group of trees on the southern and western side is covered up to fifty or eighty feet in height with the Roses, and when in full bloom they look like a sheet of white, and the air all round is most beautifully scented. It is certainly a glorious sight. The ground all round is strewed with the seeds of the Rose in July."

Freylinia cestroides is a shrub about which I knew nothing until this week, when a friend sent some flowering branches of it from Cannes, on the Riviera, where he says it forms a handsome bush and flowers freely in October. The branches are erect and clothed with opposite linear-lanceolate, smooth, green leaves, four or five inches long, and bearing long, erect, crowded terminal racemes of creamy yellow tubular flowers, not unlike those of Cestrum aurantiacum. Freylinia is a genus of three or four species, all natives of the Cape of Good Hope. It is a near ally of Scrophularia and Ixianthes, the latter also a native of the Cape, and a handsome-flowered shrub, which has lately been introduced to Kew. Phygalius is another near relation to Freylinia. F. cestroides is apparently the handsomest as a garden-plant. Possibly it is in cultivation under one or other of its synonyms, which are F. oppositifolia, Buddleia glaberrima, Capraria lanceolata and C. salicifolia. It is a shrub worth looking after.

Flora of South Arabia.—Mr. Theodore Bent, the well-known archæologist and traveler, having arranged an expedition to Hadramant, in south Arabia, the Director of Kew has obtained permission for a plant-collector to accompany him in the interests of Kew. Hadramant is one of the four ancient kingdoms of southern Arabia which formerly supplied the world with its more important luxuries. It is practically unknown, but is reported to be rich in ruins and inscriptions. Frankincense, the product of Boswellia Carteri, is obtained almost exclusively from this part of Arabia. There are good reasons for believing that the flora of that part of Arabia is exceptionally interesting, both botanically and horticulturally. The small island of Socotra, off the coast of south Arabia, proved a rich mine both to botanists and horticulturists when visited by Professor Bayley Balfour thirteen years ago. Mr. Bent's party starts next week, and will be away about six months.

Orchid Culture.—Monsieur Lucien Linden announces a book on Orchids, written by himself, in which he publishes the details of the cultural methods adopted in the establishment at Brussels over which he presides, and where Orchids generally are cultivated with exceptional success. The book will contain about 800 pages, and treats upon the classification and distribution of Orchids, in addition to their history in gardens and other matters of interest connected with this popular family of plants. Monsieur Linden and his father have had so much experience in the collecting, establishing and distributing of all kinds of Orchids, and have introduced so many of those species which are most popular in gardens, that this book cannot fail to interest growers and admirers of Orchids. It is promised for January, 1894, the price being twenty-five francs. An English edition is, I believe, in contemplation.

CATTLEYA BROWNII.—This is a new species, which Mr. Rolfe has named for Messrs. F. Sander & Co., who included about a score of recently imported plants of it in a late auction sale. A full description of it will be published in the *Kew Bulletin*. It is said to be a strong, free grower, with pseudo-bulbs about two feet high, terminated by a pair of large, oblong, coriaceous leaves, and a raceme of five and more flowers, which measure from three and a half to four inches in diameter. The sepals and petals are bright rose-purple, in some of the forms spotted with darker purple. The petals are a little broader than the sepals, and elegantly undulated. The lip is three-lobed, the color ranging from light blush pink to light rose-purple, with darker veins on the rounded front lobe.

ONCIDIUM SANDERIANUM.—Plants of this new Oncidium have been offered for sale, and, judging from the description published by the vendors, it ought to be a first-rate garden Orchid. It is said to come from the Cattleya Rex country, but is found growing at a much higher elevation, and ordinary cool treatment will suit it. The flowers are large and bold, and remind one of the beautiful O. lamelligerum or macranthum, combining the colors of those species. The petals are of a dusky red-crimson, with golden margins, and they resemble somewhat those of O. Kramerianum. The sepals are of the same color as the petals, but quite one-colored. A most distinctive feature in this new species is that the sepals stand boldly upright, as in O. Kramerianum; the spikes are stiff, and the flowers, which are individually four inches in diameter, are borne in abundance. A great recommendation of this plant is its adaptability to the cool greenhouse, which will suit it admirably, and it will grow and flower with freedom under such conditions.

ACIDANTHERA ÆQUINOCTIALIS.—This plant is now flowering in a warm house at Kew. It was introduced from the Sugar-loaf Mountain in Sierra Leone, by Mr. Scott Elliott, early this year (see GARDEN AND FOREST, page 133), corms of it having been collected for him by Captain Donovan at an

Fig. 75.—New Chrysanthemum, Pitcher & Manda.—See page 514.

elevation of 3,000 feet. The Kew plants are four feet high, Gladiolus-like, with leaves one and a half inch wide and twenty inches long. The flowers are nodding in a loose spike and are half as large again as those of A. bicolor; they are three inches wide, the segments regular and pure snow-white, with a broad band of crimson at the base of each segment; the tube of the flower is curved and six inches long. So far, this plant has thriven best in a warm house. It is a good garden-plant and interesting botanically.

London. *W. Watson.*

Cultural Department.

Sub-Irrigation.

ONE of the difficulties in agricultural and horticultural practice is the removal of surplus moisture from the soil at one time, and the supply of moisture in another, since a proper distribution of water in the soil is a prime element in the successful growth of crops. Different plans for supplying water to the roots of plants have been devised by what is known as sub-irrigation, and we present the statement of a method that was employed by Professor Lazenby, in the Horticultural Department of the Ohio State University, where water was applied to the soil of the forcing-house and hot-bed under the surface, and a system of irrigation and drainage was arranged for the out-of-door garden. The main features of the plan, as described in *Agricultural Science*, are the following:

For Vegetable Forcing-houses.—Water-tight benches were constructed for the houses by using hardwood flooring of Georgia pine and pouring white-lead into the grooves. On the side benches, which are four feet wide, two lines of three-inch drain-tile were laid, extending their whole length of one hundred feet. In the middle bench, seven feet wide, three or four lines of tile were used, and the ends were laid in cement, which extended partly up the sides of the joints. If the joints had been left wholly open, water would run out of them too freely at first, and would not be carried to the farther end of the line as quickly as was desired. When the sides of the joints are cemented the water passes through the whole length of tile before much runs out, and then it escapes from all the joints alike and is distributed evenly. Instead of drain-tile, sewer-pipe was used in one of the side benches, and one and a half-inch iron pipe with quarter-inch holes every two feet on the lower side was also used. In each house a small space was reserved for surface-watering as a check upon the results. The crops grown were Radishes, Lettuce, Tomatoes, Parsley and Cucumbers, and in spite of the predictions of many that it was "always necessary to sprinkle foliage in greenhouse plants," and that "the air would be so dry that the plants would wither," the growth and health of the crops were remarkable. By careful weighing and actual market returns it was found that the Radishes averaged more than fifty per cent. better, and the difference in earliness and quality was as marked as the difference in quantity. With surface-watering especially, when the weather was cold, there was a rank top growth and small development of root. When pulled for market the tops would often weigh more than the roots, and many plants with unusually large tops would have small, tough, spindling roots. With under-surface watering the tops were comparatively small and the roots larger, almost double the weight of the former, and well developed in every part. The effect on Lettuce was equally evident, as the yield was twenty-five per cent. greater, and the lettuce-rot, which was quite bad where surface-watering was practiced, was held in check. The effect on Cucumbers was not less beneficial, but the results were less marked on Tomatoes and Parsley, although the advantages were discernible. On the average it was found necessary to run water into the tiles only once a week, a great reduction of labor. The proper amount to use is easily determined by the appearance of the plants or the condition of the soil, and there is little danger of overwatering, for the tiles act to a certain extent as drains, and by allowing free access of air the soil does not become sour. The results obtained for three successive years demonstrated that for the vegetable forcing-house under-surface watering is a success, being economical of water, economical of time and labor, and a check to fungous diseases. It keeps the soil in the best condition by preventing surface-hardening and water-soaking, and is the best method of securing an even distribution of moisture to the roots of growing plants.

For Seed-beds and Seedlings.—In the hot, dry weather of late summer and early autumn it is hard to secure an even germination of fine vegetables seeds by surface-watering on account of the rapid evaporation. Besides this, great injury is often done by washing out some seeds and burying others too deeply. The method of watering here is by placing two water-tight benches or shallow tanks, one near the potting-room, and another under one of the soil-benches, and into these an inch or so of water is turned. Seeds are then sown in flats with perforated bottoms, and containing about two inches of fine black muck. The flat is then placed in the watering-bench, and as soon as the soil is saturated they are set on a frame above the bench, and when occasion requires are watered in the same way. During the very hottest and driest weather one watering sufficed for three days, and would ordinarily answer for five or six. By the plan of sprinkling the surface once or twice a day it would have been almost impossible to keep the soil equally moist throughout and prevent the surface from washing and baking; besides this, the seeds would have been disturbed, and the young seedlings more or less injured by damping off. It seems clear that under-surface watering is the way to supply moisture evenly and economically to germinating seeds and late plants for the greenhouse or hot-bed.

Combined Drainage and Irrigation in the Garden.—In early spring, and often at other times, the soil is too wet, and it is as often too dry in summer and autumn. An attempt was made to modify this irregularity of supply and keep the soil-moisture under control upon a level spot in the vegetable-garden, which was divided into five plots, each twenty-five feet by forty. Through these plots lines of three-inch tile were laid on an exact level, with the ends embedded in cement. They were eight inches deep, and the rows two and a half inches apart. At one end of each line an upright tile was placed, into which water could be turned, and at the other end of the line the tile continued beyond the plants, and acted as an outlet when the tiles were used as a drain. A valve was set at the beginning of this outlet, so that when desired water could be held in the tile—that is, when the soil was too wet the valve was open, and the tiles acted as a drain; when it became too dry, water was turned into the tiles, the valves were closed, and the tiles acted as a reservoir, from which the water could pass into the soil. In the early spring, some early Beets planted here matured while moisture was still abundant, and showed little difference in yield between the tiled and the untiled plots. For Onions and String Beans, which matured later, the water was turned into the tiles at five different times. The Onions increased over fifty per cent., the Beans were more than doubled in weight, while the quality was greatly improved and the season lengthened. The soil in the tiled plots was dry, and in a fit condition to work several days in spring before the adjacent untiled plots, so that the experiment, so far, seems to prove that this method has all the advantages of under-surface watering in the greenhouse.

A Neglected Vegetable.

WITH the exception of a row or two of plants grown from purchased Onion sets for use in the green state, or of a few stalks of the Egyptian-tree or Winter Onion, or of a clump or two of "Chives" in some out-of-the-way corner, the genus Allium is seldom worthily represented in the home-garden. The majority of amateurs claim that at present average prices dry onions can be bought at much less cost during autumn or winter than they can be produced, except by a skilled market-grower on a large scale. Under some circumstances this may be true. The chief reason, however, for this neglect of one of our most important vegetables is that amateurs look upon it almost disdainfully as a sort of outlaw without the refinement or delicacy which is looked for in the inhabitants of the home-garden. This is a great injustice, especially since the introduction, in 1888, of the Prizetaker, the best of all Onions now in cultivation in America. It resembles the imported Spanish Onion in color and shape, equals it in mildness of flavor, and bulbs are easily grown to weigh from one to two pounds each. I have seen specimens weighing five and six pounds. In short, if the home-grower proceeds in the right way he will find as much satisfaction and advantage in growing a bed of Onions as he can desire from the production of any other vegetable, and a bed of well-grown Prizetaker Onions is an exhibit of which any gardener may well be proud. In the market the Prizetaker has not yet attained the position of a successful rival of the Spanish Onion, but the home-grower

will find it for all practical purposes the equal of that special favorite.

In order to get the full measure of pleasure and profit out of the Prizetaker, it should have an early start and the rich, well-prepared soil usually found in the home-garden, and the beds should be made rather compact by rolling, tramping or otherwise. Often the soil of the home-garden is too mellow and loose for best results in Onion-growing. The plants may be started in a box eighteen inches by nine, such as come to grocers containing canned meats, being large enough for all the plants needed for an average home-garden supply. Success is almost insured if one has strong plants ready for putting in open ground by the time when onion-growers usually sow their seed, that is, as early in spring as soil and season will permit. It takes from eight to ten weeks to grow the plants to the desired size, which is from one-eighth to three-sixteenths of an inch in diameter near the surface of the soil. I prefer clear river sand to ordinary soils in which to grow the plants. The box, about five inches deep, is filled up to within an inch of the top, and the seed contained in a ten-cent paper, say one-eighth of an ounce or rather more, is scattered evenly over the well-watered surface, and a half-inch or so of clear sand is then sifted over it. The box may be put into a warm kitchen window, an early hot-bed, or on a greenhouse bench, and the plants cared for in the usual manner. Even if soil is used in the boxes, I would at least put an inch of sand on top, as the plants and their roots turn out much nicer in sand than in even the best of soil; but clear sand will need some extra applications of plant-foods. I usually water the plants from time to time with the soap-suds from the wash-house, or with liquid-manure, or else sprinkle a trifle of nitrate of soda, potash and bone-superphosphate over each box. As I want to have my plants ready for setting in open ground about the middle of April, I usually sow the seed by the middle of February, or shortly after. There is little difficulty in raising the plants. A box of the dimensions given has room for at least five hundred fine plants, which, set in rows one foot apart and three inches apart in the row, should give not less than three hundred pounds or upward of five bushels of splendid bulbs. The commercial grower might raise from eight hundred to one thousand plants in one of the boxes, but for the home-garden I would prefer the smaller number. It is very desirable to set large plants as they seem to make larger onions in the end.

Every amateur whom I can induce to make the suggested trial with the Prizetaker will thank me, I am sure, for having called his attention to the "new culture" of an ennobled "pariah of the home-garden."

La Salle, N. Y. *T. Greiner.*

Late-flowering Chrysanthemums.

WHEN the Chrysanthemum shows are set down for the earlier part of November, the intending exhibitor, as he examines the slowly expanding buds, often feels that he has too many late varieties in his collection; but when the last third of the month rolls around he remarks on the great scarcity of really fine sorts at his disposal; the number of late varieties is very limited and confined, with hardly an exception, to white and yellow in colors.

Mrs. W. K. Harris, eagerly welcomed some five years ago as a good late yellow, has been reluctantly discarded on account of its faulty constitution; Dr. Covert, a very bright golden-yellow, full and incurving, divides honors with Eva Hoyte, another magnificent yellow Japanese; neither of these is of difficult management, though they require careful cultivation; they will never be found in superabundance, because of their rather slow production of root-suckers for propagation. Another superior late yellow is the great prize-taker of the year, Challenge, an immense sphere of golden color, which by December 1st has become a pointed ball, if this description may be allowed. All of these late yellows are possessed of great keeping qualities, and by care in cutting and placing in a dry cellar their floral sunshine may be enjoyed along with the Christmas dinner.

Besides these three fine yellows, there are three good white varieties—the old Christmas Eve, of only medium size, but graceful in growth and form; Potter Palmer, which is really an enlarged and improved L. Canning, very valuable, and not so well known as it should be, and the queenly Flora Hill, which is never to be forgotten when once seen in statuesque perfection. It has been said that this variety is difficult to grow, but any one who will study its requirements and win success with it, will find himself amply repaid for his trouble, and it is really only a case of knowing how.

Superior late red Chrysanthemums are Mrs. Andrew Carnegie, a gorgeous flower when well grown, but now seldom seen, and O. P. Bassett, a king among crimsons, but a failure except in the hands of an expert.

Probably one reason why there are so few good late varieties is that growers have not had patience to wait for the bloom of the last straggling seedlings, in their eagerness to clear and reset their beds. And then, too, raisers of seedlings have learned that a new variety must have the endorsement of competent judges before the grower of to-day will accept it, and these rear-guards of the floral procession are too late for the shows, and thus lose value in the estimate of their propagators. Now that we have a National Chrysanthemum Society, it should be practicable to have these late varieties passed upon by the officers of the society and brought to recognition if they are worthy of it. A few pre-eminently good late varieties, covering a wider range of colors, and, especially of free growth, would be a valuable acquisition alike to amateurs and commercial growers.

Regarding red varieties, it is a noticeable peculiarity that, with the exception of Cullingfordi, George W. Childs and O. P. Bassett, nearly all, except the semi-double ones, turn their dull sides outward and jealously hide their crimson velvet from view, and the only way to compel this class to show their true colors is to grow them in bush form; this great variance in the form of the flower, as seen in contrasting the single-stem bloom with that of the spray, is one of the most interesting facts to be noted in Chrysanthemum culture. Good red varieties are not yet crowding each other for room.

Richmond, Ind. *Sarah A. Hill.*

WHY good late Chrysanthemums are scarce is probably owing to the prevalent plan of holding exhibitions at about the same time—that is, in mid-season. In selecting and raising new varieties many fine kinds are discarded on account of their lateness, seeing that they do not develop in time to be passed upon by the various committees. Some plan ought to be devised by the National Chrysanthemum Society of America for recognizing both very early and very late varieties.

I have recently visited many of the leading growers in the vicinity of Boston with a view of learning what is grown for late blooms. I find no specially late kinds are selected, except in one instance, dependence being entirely upon late-struck cuttings of ordinary varieties and some even of early kinds. Those most commonly grown were Cullingfordi, Mrs. Irving Clarke, Minnie Wanamaker, Moonlight, Mr. H. Cannell, Harry Widener, Mrs. Kimball and W. H. Lincoln.

Really late varieties are White Cap, a very dwarf kind, with folded ribbon-like petals, making a compact ball. This is a very neat grower, and makes a good specimen. Gold-finder, very much like the preceding, except that it is yellow instead of white. Olga, pink, and always too late for the exhibitions. The blooms are rather flat and incurved, but the color is good. Mrs. Humphreys, a white, rather small, ideal bloom, with straight flat petals, slightly incurved and very compact. It also makes a good specimen plant. Wanlass, a new incurved pink Japanese, which has never been sufficiently developed to exhibit. It is a rather tall, but very even, grower, and will probably be one of the very best late varieties for large cut blooms.

Eiderdown, another new variety which, also, has not been in condition to exhibit at the regular shows. It has been aptly styled a white Kiota, very much resembling this lovely variety in all but color. C. B. Whitnal, a very handsome incurved crimson. It forms a very large and perfectly incurved bloom, and is particularly valuable on account of its color, which is scarce at any season. Mrs. Robert Craig, another white variety, which is not as well known as it should be. It is a lovely incurved white of medium size, and may be kept until very late. Mrs. F. L. Ames, better, as this season has proved, than its originator claimed for it. Its late blooms are remarkably good. It is an orange-yellow incurved Japanese, of great depth and good constitution. May's White Gem and Mrs. W. G. Newitt, these have both proved late with me. A very handsome plant of each was left out of the exhibitions on account of lateness. The latter is a particularly handsome variety, not only as a specimen plant, but for single blooms.

At one place I visited Emily Dorner, bronze incurved, S. C. Burpee, bronze reflexed, and Eda Præs, flesh pink, were late, and considered very valuable, particularly on account of their lovely colors. Syringa, pink, and its white sport, Moly Bawn, are also both quite late, and although very beautiful are considered undesirable from a commercial point of view on account of its difficulty in packing them. The same also must be said of Mrs. Isaac Price, yellow and very late, much like

Golden Dragon, but difficult to ship, because the petals interlock badly. Ethel, white, and Mrs. H. J. Jones, yellow, are desirable older varieties.

Wellesley, Mass. *T. D. Hatfield.*

Protecting Plants in Winter.

MOST hardy plants that suffer in winter are injured by the warmer open weather. Alpines that are accustomed to the severest cold are often winter-killed in cultivation. This comes not from the severe cold, but from alternate freezing and thawing. Hardy herbaceous plants not fully established are liable to be injured in the same way. When these are planted in autumn a protection is quite necessary. Snow is as good a covering as can be desired if it could only be relied upon; but it seldom stays all winter. For herbaceous plants set out in autumn I find a light covering of swale-hay quite satisfactory. It does not smother the plants. They are frozen under it, which is good for them, and when a few days of mild thawing weather comes it seldom reaches or injures them. Thawing in the shade or dark and thawing in the light are quite different in their results upon plant-life. The latter is much more injurious, but when plants are well covered they are not seemingly injured if the thawing reaches them.

When more protection than this is needed, as is the case with the California bulbs, three inches of leaves under the swale-hay is used. The hay is heavy, and holds the leaves in place. Leaves alone will not stay, and the hay is better than brush to hold them in place. For the most tender plants, where all frost is to be excluded, a layer of leaves eight or ten inches thick is needed under the hay. A six-inch layer would suffice in most winters, but sometimes, if the leaves become wet and packed together, very severe weather will penetrate them. There is occasionally a plant that will not bear covering at all. I never succeeded in wintering Houstonia cœrulea under any covering but snow.

Charlotte, Vt. *F. H. Horsford.*

Correspondence.

Halesia vs. Mohria vel Mohrodendron.

To the Editor of Garden and Forest:

Sir,—The change proposed by Dr. Britton for the name applied to the Silver-bell-tree for 130 years past (see p. 463) is based on the dictum propounded by the Botanical Club of the American Association for the Advancement of Science, at its Rochester meeting in 1892. To compensate for the infinite mischief and confusion which obedience to that rule will entail, there should be corresponding benefits, not yet visible, and before it can be accepted its validity should be beyond doubt.

Without entering into the question whence that club derived its authority to legislate, I make the point that a retrospective edict like that under discussion was clearly beyond its power, ultra vires. Had the club recommended that names hereafter proposed, and then set aside as synonyms, should not be revived for any other purpose, the recommendation would have been worthy of consideration; perhaps of adoption. But the retrospective legislation attempted is clearly ex post facto.

Take the case brought up by Dr. Britton. Paul Browne having used the name Halesia for a Jamaica plant which proved to belong to the genus Guettarda, L., it became a synonym, a dropped name. When Ellis proposed to take it up for our Silver-bell-tree, did he violate any canon? Surely not, for none existed. When Linnæus adopted the name in 1759, did he (the father of binomial nomenclature) become a law-breaker? When successively all the writers on North American botany, Walter, Marshall, Michaux, Pursh, Nuttall, Torrey, Darlington, Chapman, Gray and others, continued to use the name, did they also sin? Why should they not have used it? And why should we not continue to use a name which has had undisputed possession for more than a century, surely long enough to plead a statute of limitation? And what is it that is now inflicting upon us "a heavy burden of synonyms hitherto escaped"? Simply an unwise canon without any validity.

Philadelphia, Pa. *John H. Redfield.*

To the Editor of Garden and Forest:

Sir,—As you have favored me with an opportunity of reading Mr. Redfield's note, I venture a few remarks on the principle which he disapproves.

Mr. Redfield appears to think that because certain practices have been in vogue for a considerable number of years no improvement upon them is possible—a proposition which, in science at least, seems directly antagonistic to all progress. In the advance of knowledge all views and methods must change, and those which were sufficient for people of fifty years ago are by no means sufficient for those of to-day, while those maintained to-day will, perhaps, be found unsatisfactory to the scientists of the next century. Science can only advance by the proposal and trial of new principles and hypotheses.

The rejection of revertible plant-names by the botanists of the American Association for the Advancement of Science, at the meeting at Rochester in 1892, was unanimously agreed upon as one of the necessary steps to be taken to secure an approximately stable system of nomenclature, and the position then taken was not called in question at the Madison meeting of last August. It is, therefore, safe to say that a great majority of North American botanists have seen the necessity for such a rule. It is, indeed, regarded by many as of equal or even perhaps greater importance than the rule of priority of publication.

To illustrate the working of the rule, let us take the case under discussion. The Linnæan genus Guettarda is based on a tree of the East Indies. Subsequently P. Browne proposed Halesia as the name of a tree growing in Jamaica. Specimens of the East Indian and West Indian trees are then compared by some one and they are found to resemble each other, and some one concludes that they are the same genus. So far, so good; but suppose another person makes the comparison and concludes that they are not the same genus. Then Halesia P. Browne comes to the front again as a generic name, and if Halesia has been applied, as in this case, to another group of plants, that must be abandoned. Now, this very thing has happened over and over again, owing to the impossibility of two authors arriving at exactly the same conclusions regarding the limitation of genera, and what is true of genera is even more conclusively illustrated in species.

The number of published plant-names is immensely greater now than it was fifty, or even ten, years ago, and from present indications it is likely to be greatly increased in the future. The conditions of the present are then by no means those of the past, and they demand different treatment. No one has accused the older authors of law-breaking. We can only regret that they could not in their time see the necessity of views which are now apparent. The legislation of the botanists of the American Association has not been effected for the past, but for the present and the future.

Columbia College, N. Y. *N. L. Britton.*

Farms and Forests on the Carolina Foot-hills.

To the Editor of Garden and Forest:

Sir,—In North Carolina cotton is not the chief crop in the Piedmont country, and it does not come within the region so badly gashed by torrents as that described by Mr. Meriwether and referred to in your article on page 441. It is a universal rule here to lay off rows for planting on horizontal lines as much as possible, so as to prevent gullying, and contour ditches and terraced embankments are common all over this section of the state. In this region, too, much Clover and Grass is grown. Not so much as there should be, however, for the whole of the Piedmont belt of North Carolina, from the mountains down to the borders of the coast-plain, can be made an admirable grass country.

I wish to confess, however, that the wasteful methods of timber destruction on the steep mountain-sides here are still in progress. In many parts of our mountain section these slopes are as fertile, if not more so, than most of the valley land, and this fact is an additional danger to the great forests which are too remote to make the timber available for the market. There are scores of mountains here, known as "Balds," which are high, prairie-like summits, from 4,000 to 6,000 feet above sea-level, and have always been treeless, and yet on these grassy mountain-crowns one can push down a walking-stick its full length in the mellow loam.

The pasturing of cattle on these wooded mountains is another evil which is almost as destructive as the axe. In these high mountain-forests small leguminous plants added to the native Grasses make pasture valuable, but in the spring and early summer cattle browse on the tender buds of the undergrowth, and the renewal of many sorts of trees is thus prevented. Riding down along Valley River to its junction with the Hiwassee, in Cherokee County, I have been struck with the fertility of these lowlands and the enormous quantities of hay stacked in the fields, and yet no cattle can be seen except an occasional milch-cow. All the stock is herded on the high mountains, and never comes down until the fall, when it is fed for the southern market. There is no lack of grass

here, and it should be a stockman's paradise, but the great herds of cattle are browsing all the year in the mountain-forest and doing infinite damage. If they were kept out of the woods in spring until the Wild Peas and Desmodiums had started into strong growth they would do less harm, since they would prefer this fodder to browsing on the bushes, and yet herds of cattle can never trample through a forest month after month without injuring it.

Raleigh, N. C. *W. F. Massey.*

Orchids for Market-flowers.

To the Editor of GARDEN AND FOREST:

Sir,—A few days ago I paid a visit to the Orchid nurseries of Mr. Ignatius Forsterman, at Newtown, Long Island, and found the place a most interesting one, notwithstanding the fact that it contains few specimen plants and comparatively few varieties. Mr. Forsterman's business is primarily that of an importer of Orchids, and he is the first man in this country, at least, to import Orchids in quantity to supply florists who grow them for the cut-flower market, and restricting his importations to those varieties which are most profitable for cut-flower purposes. The cultivation of Orchids for cut flowers is comparatively new. Half a dozen years ago, it is true, an Orchid-flower was sold now and then, and occasional sprays of these flowers from private collections were not unknown at sumptuous entertainments; but there was nothing like a regular demand, and, therefore, nothing like a regular supply of them, and at least five hundred Orchid-flowers are sold to-day where one was sold half a dozen years ago. Mr. Forsterman's prosperous establishment is a proof that the business has already reached considerable proportions. Its rapid growth is due largely to the efforts of Mr. Charles Thorley, one of the leading florists of this city. Long before he could sell a single Orchid-flower he was in the habit of decorating his windows with them, and he occasionally pressed one on his best customers even when he lost money by it. He was always pushing them forward with the purpose of introducing them as market-flowers. His success in this particular has been marked, so that now he very often sells from five hundred to one thousand for a single wedding or ball, and sometimes even more. This means that there must be a regular supply, especially for this city, which is the chief market. In the neighborhood of New York, among the florists who grow them largely for market are Julius Roehrs, of Carlton Hill, New Jersey; Pitcher & Manda, who, in addition to their nursery business, sell many Orchid-blooms; W. H. De Forest, Summit, New Jersey; J. N. Keller, Bay Ridge, New York; F. Schuchardt, Newtown, Long Island; Siebrecht & Wadley, New Rochelle, and Mr. Forsterman himself, who keeps a large number of flowering plants, and who announces to the trade that he holds himself always in readiness to supply a hundred flowers on a telegraphic order. Outside of New York, the principal growers are Edwin Lonsdale, of Philadelphia, J. T. Anthony, of Chicago, and Benjamin Grey, of Boston. A fair estimate of the amount paid to retail dealers for Orchid-flowers this winter in New York would be about $25,000.

The plants most largely imported by Mr. Forsterman are Cattleyas. These are not expensive; they can be grown easily; people have learned to know what they are; they show well by artificial light and a supply is always obtainable. Cattleya Trianæ begins to bloom in late November and lasts well through the winter, C. Mossiæ comes on in April and May; C. Gaskelliana in June and July, and then in September and October C. labiata autumnalis is in season. There is something of a gap between the last flowers of Cattleya Trianæ and the first of C. Mossiæ, and Mr. Forsterman is now hurrying forward C. Gaskelliana for Easter, and, owing to its peculiar way of flowering, he has no doubt that he can have it flower in time. He imports very few plants of C. Percivaliana, because, in this country, this species comes in with C. Trianæ, and therefore seems to be superfluous. The flowers of Cattleyas retail at from seventy-five cents to $1.00 each.

Next in order, according to the number sold, come the Cypripediums, principally C. insigne, although many plants of C. villosum and C. Lawrencianum are used, while occasionally the flowers of some expensive hybrids are seen in market. Cypripediums are largely used in making wreaths and baskets and for table-decorations. C. insigne is especially valuable, since its rich, but rather undecided, colors harmonize with almost every other tint. Besides this, it is a very sturdy plant, and does well outside in the summer under canvas. Phalænopses are used to some extent for the market, especially P. amabilis, and in smaller quantities P. Schilleriana and P. Stuartiana. P. grandiflora would be an excellent plant for market, as it has a fine white flower, and the demand for white Orchids is insatiable, but it is difficult to grow, more so even than the other Phalænopses, which, unless special care is taken, will often dwindle away. Dendrobium formosum giganteum, another white flower, is also in demand, for, although it is not so graceful as the Phalænopses, it keeps better. Dendrobium Wardianum and D. nobile are grown to a considerable extent, but their flowers are not usually cut, and the plants themselves, when in bloom, are rented to florists, who place them in their windows to make them attractive.

The flowers of Oncidium varicosum and O. tigrinum always sell well, as they are very graceful and rich in coloring. They are not long-lived, however; they make such strong spikes that the effort seems to exhaust them. On account of the beauty of its long, arching spike, thickly set with large flowers, ranging from pure white to cream-white and various markings, Odontoglossum crispum would probably be classed as the most desirable of all Orchids for market purposes, but it is an expensive plant, it is hard to grow, and it is quite uncertain. The failure of the bulbs to ripen perfectly, too much heat in summer, or many other chances, will blast the hopes of its grower. This about completes the list of the Orchids now in use. Mr. Forsterman is of the opinion that several others will be profitably grown in the future, and yet it would be a risk to recommend any one now to use them in quantity until further experience is gained. Dendrobium Phalænopsis probably is to be one of the useful plants in the future, as it is easy to grow; its flowers are of an acceptable color, its spike is long and graceful, and it lasts well. It is not yet sufficiently abundant, however, to be sold in any quantity for cut flowers.

Mr. Forsterman has seven large houses, each 100 to 150 feet long, and most of these are well stocked out of the 40,000 plants which he has imported within the last two years to sell in quantity. No bench-space is lost, for, with the exception of the Cypripediums, they all hang in six-inch pots above other plants which will thrive in this partial shade. In a house full of Cattleya Mossiæ which was potted in September nearly every plant is now showing flower-sheaths and strong roots. Near the peak of this cool-house were two or three rows of C. Trianæ, which were being transferred to a warmer house as they advanced, in order to flower them, and when the flowering season is over they are brought back. Below these plants are benches of Kentias and some hardy Ferns, which seemed in luxuriant health. Mr. Forsterman had tried some of the colored Dracænas, but they did not succeed here. In the warmer house under the Orchids were many fine plants of Ardisia crenulata full of fruit; some bright Anthuriums, with Adiantum Farleyense growing like a weed; Cocos Weddelliana, and some Selaginella. Here many plants of C. Trianæ were in flower, some of them striking varieties, the flower of one being almost pure white. The chance of finding choice varieties in such large importations is very considerable, and these largely increase the chances of profit.

In another house, where pots of Cattleya Gaskelliana and Vanda cœrulea were hanging on the north side, there were some fine stocky Azaleas, already beginning to flower for Christmas, and another still, with Dendrobiums and Cattleya Mossiæ on the north side, was full of Lilies, Carnations and Marguerites. In a low narrow house a thousand pots of Cypripedium insigne were seen, each containing three growths, and from these Mr. Forsterman expected many improved varieties. His importations of these Cypripediums last year amounted to 12,000. In the same house I noted a large number of Cymbidium eburneum and C. Mastersi, which looks as if Mr. Forsterman considered these likely to be profitable market-plants.

I observed many other interesting points in connection with the cultivation of Genistas, Aspidistras and other plants, but, after all, the Orchids were the object of chief interest.

The business only started four years ago with a very moderate capital, and that it is so plainly successful is one of the striking facts in the current history of commercial floriculture. Mr. Forsterman is himself a collector of long experience, having spent half a dozen years in the East, traveling through Burma, Assam, Siam, Borneo, Java, Sumatra and the Philippine Islands. He afterward represented a large English firm in this country for several years, so that he is not only thoroughly acquainted with the habits of the plants, but with the needs of this market. In addition to their beauty and grace, as well as their striking difference from the majority of flowers that are grown for sale, Orchid-flowers have the advantage of being very durable after they are cut, so that, when the time they last is considered, they are not really much more expensive than other first-class flowers, and Mr. Forsterman has no doubt that the business will continue to expand in the future as rapidly as it has done in the past.

New York. *S.*

Notes.

Monsieur George Mantin, who is said to be one of the most successful cultivators of Orchids in Europe, his collection at Olivet, in France, being particularly rich in the terrestrial species of temperate regions, is about to publish a *Dictionnaire Général des Orchidées*, in which he proposes to include all the species now known, with their synonyms and geographical distribution, together with brief cultural notes.

An Ohio correspondent of *Insect Life* writes that he has made some successful experiments in fighting the rose-chafer with carbolic acid. He used one gallon of crude acid to one hundred gallons of water, and sprayed fruit-trees and Grape-vines where the rose-bugs were troublesome. At the time of the application the Grapes were in flower, but neither the fruit nor foliage of vines or trees was injured, while the crop of grapes and cherries was saved. Professor Riley suggests that further experiments be made in this direction, as the rose-bug is one of the most persistent and irrepressible of insect pests.

A California paper mentions as a peculiarity of the Orange Cling Peach, a variety which has been quite abundant in this city during the past season, that the trees form a second crop with almost unfailing regularity. While the first peaches are coloring, blossoms appear, and in due time a second crop forms and ripens. The fruit of this second crop is of good color, grain and flavor, but it is always misshapen, and looks quite unlike a peach. It never has a pit, but in its place is a dark centre, which is no harder than the pulp of the fruit. These peaches, though often set very thick on the trees, are always small, rarely exceeding a boy's marble in size.

Probably the most unique exhibit in the nursery area at the Columbian Exposition was one made by the *Orange Judd Farmer*, contrasting the common weedy fence-row and a modern well-kept one. The unkempt row showed a typical worm or rail-fence, with the corners filled with 125 different kinds of weedy growths, and in front was a small area with named clumps of the various farm weeds. This fence-row was a most picturesque affair and had a certain undesigned artistic value wholly aside from its direct economic purpose. The model fence-row showed sections of wire and board fence, with a closely mown strip of sod beneath, which projected only a foot beyond the fence upon either side.

About sixty car-loads of New York state grapes were received here over the various railroads during last week. These are mostly Catawbas, but there are still some Concords, and also a few Delawares, now quite out of season, which have been successfully held in cold storage in the vineyard districts. A single car-load of California grapes, direct from the western coast, was sold on Monday morning, a week after the last California fruit was supposed to have arrived. Flame Tokay, Cornichon, Verdel, Ferrera, Morocco and Muscat grapes made up 985 half-crates. The fruit was in good condition, and brought as much as $3.65 a half-crate at wholesale on the dock, or about eighteen cents a pound. As California grapes keep in cold storage from three to six weeks, and considerable quantities are being held in this city, we may expect to have supplies of this fruit well into the winter.

It is now three hundred years since Sir Walter Raleigh lived in Ireland, but, according to Sir John Pope Hennesy, many traces of his residence there can still be seen. The richly perfumed yellow wall-flowers that he brought to Ireland from the Azores, and the Affane Cherry are still found where he first planted them, by the Blackwater. Some Cedars he brought to Cork are to this day growing at a place called Tivoli. The four venerable Yew-trees, whose branches have grown and intermingled into a sort of summer-house thatch, are pointed out as having sheltered Raleigh when he first smoked tobacco in his Youghal garden. In that garden he also planted Tobacco. A few steps further on, where the town-wall of the thirteenth century bounds the garden of the warden's house, is the famous spot where the first Irish Potato was planted by him. In that garden he gave the tubers to the ancestor of the present Lord Southwell, by whom they were spread throughout the province of Munster.

Messrs. Siebrecht & Wadley are now selling flowers of the new Rose which they have named Bella Siebrecht, and which is attracting much attention by its beauty and fragrance. The color is deep rose-pink, the foliage is good, and it is said to be a free bloomer. The cut flowers keep well, and these, with La France and Meteor, bring, at retail, four dollars a dozen, and Madame Cusin and Catherine Mermet from two to three dollars a dozen. Choice American Beauty roses sell at nine to twelve dollars a dozen. Chrysanthemums are now quite passed out of market, and violets are the most popular of all cut flowers. Cut flowers of the popular Cypripedium insigne and C. Spicereanum sell for fifty cents each, and of Cattleya Percivaliana and C. Trianæ at fifty cents to a dollar apiece. Among the Lælias seen in the retail stores are L. autumnalis and L. anceps and varieties. Sprays of Oncidium varicosum and O. tigrinum are one to two dollars each. A popular plant this season is the Otaheite Orange, well-fruited specimens of which command from four to six dollars.

The Agricultural Gazette, of New South Wales, has an interesting article on Grevillea robusta, small plants of which are now largely used for the winter decoration of conservatories, as well as in sub-tropical groups on lawns in summer, where its Fern-like foliage is quite effective. Under the name of the Silky Oak it is highly prized as a timber-tree, not only in Australia, of which it is a native, but in Ceylon and other tropical countries, where it has been introduced. It grows to a height of about eighty feet, with a trunk diameter of two and a half to three feet, and it increases with almost as great rapidity as the various kinds of Eucalyptus. The timber is pale, ranging from cream to a flesh color, but it darkens with age, and has a beautiful mottled grain characteristic of most of the wood of the Proteaceæ. It is elastic, durable, splits readily, and is used largely for staves of wine-casks. When in bloom the tree presents a beautiful spectacle, with its orange-colored blossoms well set off by the light feathery foliage. The flowers abound in nectar, and it is an excellent bee-plant. It is being largely planted in Algeria, and in Jamaica a seedling has grown in seven years to a height of forty feet, with a girth of more than three feet one foot from the ground, and has flowered abundantly.

In the announcement of the annual meeting of the American Forestry Association, which is to be held in Washington on the 15th of December, among the grounds for encouragement, it is noted, that the President of the Association is now the Secretary of Agriculture; that one of its former secretaries is in charge of the public timber-lands at the General Land Office; that the chairman of the Public Lands Committee in the House of Representatives is fully persuaded of the necessity of a new forest-legislation in the direction proposed by the Association; and that the lumber-trade journals are recognizing the fact that the interests of the lumbermen are identical with those of the public. With the notice of the meeting is enclosed an appeal by Mr. Fernow to the members of the Association to urge upon their representatives in Congress the passage of the bill introduced by Mr. McRae, of Arkansas, and already reported favorably upon by the Committee on Public Lands. This is the bill which was approved by Secretary Smith in his report to the President, and it secures protection for the forest-reservations, which now comprise nearly eighteen millions of acres, by the employment of the army, which has already done effective work in the Yellowstone Park and the Yosemite Reservation. It also empowers the Secretary of the Interior to make such rules and establish such a service as will ensure the objects of such reservations, namely, to regulate their occupancy, to utilize the timber of commercial value, and to preserve the forest-cover from destruction. It also empowers the Secretary to have cut and to sell timber on non-reserved lands under the same regulations which are made for the forest-reservations, provided that it shall be first shown that such cutting will not be injurious to the public interests, and the proceeds from such sales are to form a special fund to be expended in the care and management of the reservations. This bill does not satisfy the ultimate requirements of a well-organized forest department, but it gives a legal status to and ensures the permanence of the principle of forest-reservations, and it substitutes a regulated use of public timber for the present system of allowing the public domain to be plundered without hindrance.

The English papers announce the death, in his sixty-seventh year, of Mr. John Waterer, of Bagshot. Mr. Waterer was a member of a family which for generations has been conspicuous in English horticulture, chiefly for their successful cultivation of Rhododendrons, Azaleas and other peat-loving plants. Mr. John Waterer followed in the lines of the family tradition; and in his nursery, which was one of the best-managed in England, some of the most showy and beautiful-flowered hybrid Rhododendrons in cultivation have originated, although, unfortunately, some of the most attractive of these are not hardy in our climate. A collection of his plants on the wooded island in Jackson Park, Chicago, attracted much attention last spring.